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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,487	11/09/2001	Tatsuo Fujisaki	839.450	5285

5514 7590 04/09/2003

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

MUTSCHLER, BRIAN L

ART UNIT PAPER NUMBER

1753

9

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,487

Applicant(s)

FUJISAKI ET AL.

Examiner

Brian L. Mutschler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Comments

1. Applicant's cancellation of claim 4 is acknowledged.
2. The objection to the specification has been overcome by Applicant's amendment.
3. The rejection of claim 4 under 35 U.S.C. 112, second paragraph, has been overcome by Applicant's amendment.
4. The rejections set forth in the Office action mailed August 28, 2002, have been modified in light of Applicant's amendment to the claims.

Specification

5. The abstract of the disclosure is objected to because it uses legal phraseology such as "said" (line 3). Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson (U.S. Pat. No. 6,080,927).

Regarding claim 1, Johnson discloses a solar power generation system having solar cells mounted on solar cell panels (**1401**, **1402**, **1403**) and is provided with an inlet

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pipe **1404** and an outlet pipe **1405** for a cooling/heat removal fluid (col. 11, lines 1-3).

The system is controlled by a microprocessor, which controls the tracking and regulatory processes of the system including the sun tracking of the heliostats, the flow monitoring of the heat removal fluid and the solar cell surface temperature, which acts as a primary control of the flow rate (col. 12, line 44 to col. 13, line 32). The microprocessor uses a control algorithm, which is capable of controlling multiple device features (col. 12, line 44 to col. 13, line 16). The use of such a control algorithm requires at least some form of memory to store and perform the procedures necessary for the algorithm to function. The system disclosed by Johnson controls the flow of the fluid, and consequently the cooling, by the flow monitoring means and the solar cell surface temperature monitor, which controls the fluid flow rate based on the temperature of the solar cells (col. 12, lines 58-67). The control system comprises a microprocessor, which inherently comprises a clocking function, and also, "the device may be installed with a clock/calendar" to track the sun (col. 12, lines 48-52).

Regarding claim 2, Johnson also discloses that a demand monitor may be used, which steers the array away from the sun when little power is being drawn, i.e., it senses the usage of the power output of the array (col. 12, lines 64-67). By turning the array away from the sun, the temperature of the solar cells would also be reduced due to the diminished incident radiation. This output-based control allows the system to operate at an optimum driving state.

Regarding claim 3, Johnson discloses a solar power generation system using a cooling system comprising a cooling/heat removal fluid (col. 11, lines 1-3).

Regarding claims 5 and 6, Johnson provides a microprocessor that supervises the disposal of surplus energy by charging batteries or converting the energy into a.c. power (col. 13, lines 17-32). In order to perform the functions, the microprocessor must be able to detect and monitor the output of the solar cells.

Regarding claim 7, the power generating system is mounted on heliostats (**1001**, **1002**) that track the movement of the sun (col. 11, lines 41-44).

Regarding the limitations "wherein said memory-and-operation means comprising...previously determined standard temperature values" in lines 6-7 of claim 1, and "wherein said cooling means is driven in accordance with said standard temperature value" in lines 9-10 of claim 1, the limitations do not positively limit the structure of the claimed device. Standard temperature values are not physical features, but are pieces of information or data stored in a memory device. Furthermore, the limitation "wherein said cooling means is driven in accordance with said standard temperature value" is a method of using the device and does not further limit the structure of the device other than to require the ability to store such values. The device of Johnson uses a microprocessor control system having a control algorithm to manage and control the various systems of the device. In order to perform the control procedures using a control algorithm, the control system must have some form of memory to store and execute the procedures that constitute the control algorithm. Combined with the flow monitoring means and surface temperature monitor, such a control system would be capable of performing in the same manner as the claimed use of the instant claims.

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Since Johnson teaches the limitations recited in instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (U.S. Pat. No. 6,080,927) in view of Mimura et al. (U.S. Pat. No. 6,147,295) or in view of Guha et al. (U.S. Pat. No. 4,555,586).

(Note: the following rejection of claims 1-3 and 5-7 is based upon an alternative mode of operation, wherein the operation of the cooling means is driven by the power output or current output, which is a function of the amount of light incident on the solar cell, in the same way the temperature of the solar cell is also dependent upon the amount of incident radiation.)

Regarding claim 1, Johnson discloses a solar power generation system having solar cells mounted on solar cell panels (**1401**, **1402**, **1403**) and is provided with an inlet pipe **1404** and an outlet pipe **1405** for a cooling/heat removal fluid (col. 11, lines 1-3). The system is controlled by a microprocessor, which controls the tracking and regulatory processes of the system including the sun tracking of the heliostats, the flow monitoring of the heat removal fluid and the solar cell surface temperature, which acts

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as a primary control of the flow rate (col. 12, line 44 to col. 13, line 32). The microprocessor uses a control algorithm, which is capable of controlling multiple device features (col. 12, line 44 to col. 13, line 16). The use of such a control algorithm requires at least some form of memory to store and perform the procedures necessary for the algorithm to function. The system disclosed by Johnson controls the flow of the fluid by the flow monitoring means and the solar cell surface temperature monitor, which controls the fluid flow rate based on the temperature of the solar cells (col. 12, lines 58-67). The control system comprises a microprocessor, which inherently comprises a clocking function, and also, "the device may be installed with a clock/calendar" to track the sun (col. 12, lines 48-52).

Regarding claim 3, Johnson discloses a solar power generation system using a cooling system comprising a cooling/heat removal fluid (col. 11, lines 1-3).

Regarding claims 5 and 6, Johnson provides a microprocessor that supervises the disposal of surplus energy by charging batteries or converting the energy into a.c. power (col. 13, lines 17-32). In order to perform the functions, the microprocessor must be able to detect and monitor the output of the solar cells.

Regarding claim 7, the power generating system is mounted on heliostats (**1001**, **1002**) that track the movement of the sun (col. 11, lines 41-44).

The solar power generating system disclosed by Johnson differs from the instant invention because the instant invention requires the cooling means to be driven by an output, either current or power, of the solar cells. Johnson discloses controlling the

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cooling means by monitoring the flow of the cooling fluid and by measuring the temperature of the solar cells based upon a control algorithm.

The temperature of the solar cell is proportional to the amount of radiation incident on the solar cell, which governs the amount of energy generated by the solar cell.

Guha et al. disclose a photovoltaic device having a temperature control element **60** attached to the solar cell **10** (col. 17, lines 59-66). The temperature control device **60** is controlled by a controller **64** that controls the device by detecting either the electrical output from the cell **10**, or the illumination incident on the cell (col. 17, line 66 to col. 18, line 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the controller of Johnson to use a controller as taught by Guha et al., which detects either the generated output of the cell or the incident radiation, because the controllers are equivalent since the temperature of the cell is proportional to both the radiation incident on the cell and the output generated by the cell.

Mimura et al. disclose a solar energy conversion device where "the amount of solar radiation is sensed according to the amount of generated electricity or voltage of the photoelectric transducer provided in the heat collector panel" (col. 7, lines 30-38).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the controller of Johnson to sense the amount of

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electricity or voltage generated by the solar cell, as taught by Mimura et al., because the detection of the electricity generated or the voltage is equivalent to the detection of the temperature of the solar cells, which is proportional to the amount of radiation on the cells and the amount of electricity generated.

Regarding the limitations “wherein said memory-and-operation means comprising...previously determined standard temperature values” in lines 6-7 of claim 1, and “wherein said cooling means is driven in accordance with said standard temperature value” in lines 9-10 of claim 1, the limitations do not positively limit the structure of the claimed device. Standard temperature values are not physical features, but are pieces of information or data stored in a memory device. Furthermore, the limitation “wherein said cooling means is driven in accordance with said standard temperature value” is a method of using the device and does not further limit the structure of the device other than to require the ability to store such values. The device of Johnson uses a microprocessor control system having a control algorithm to manage and control the various systems of the device. In order to perform the control procedures using a control algorithm, the control system must have some form of memory to store and execute the procedures that constitute the control algorithm. Combined with the flow monitoring means and surface temperature monitor, such a control system would be capable of performing in the same manner as the claimed use of the instant claims.

Response to Arguments

10. Applicant's arguments with respect to claims 1-3 and 5-7 have been considered but are moot in view of the new ground(s) of rejection.

11. Regarding claim 1, Applicant argues, "the cooling means is driven in accordance with the previously determined standard temperature values for the atmosphere where the solar cell is installed...[which] is advantageous over conventional systems since it permits operation that is tailored to local temperatures" (see page 8 of Applicant's response).

12. This argument is not persuasive because it doesn't provide any evidence for how the device of the instant claims is structurally distinguished over the prior art device. While the intended operation or use recited in the instant claims may be different, it is the Examiner's position that Johnson teaches all of the structural limitations recited in the instant claims and is also capable of being used in a manner consistent with the intended use recited in the instant claims. Regarding the intended use of a device, the MPEP § 2114 states:

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). (emphasis in original)

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

13. As explained above, the prior art of record discloses solar cells having cooling systems with the structural limitations recited in the instant claims. In addition to being capable of performing the intended use recited in the instant claims, the prior art systems also disclose various control methods for controlling the temperature of the solar cells based on various criteria.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Mutschler whose telephone number is (703)

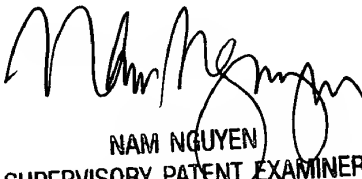
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305-0180. The examiner can normally be reached on Monday-Friday from 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

blm
April 8, 2003


NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700